

Service Manual

ORDER NO.
RRV1040

FM/AM DIGITAL SYNTHESIZER TUNER

F-J220 F-J220L

- Refer to the service manual ARP2690 for F - J210 /ZEWZIX1K.

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	Remarks
	F - J220	F - J220L		
ZEWZIX1K	○	—	DC power supplied from other system component	
ZEBX1K	○	○		
ZDL	○	—		

CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

F-J220/ZEWZIX1K, ZEBX1K, ZDL, F-J220L/ZEBX1K and F-J210/ZEWZIX1K have the same construction except for the following :

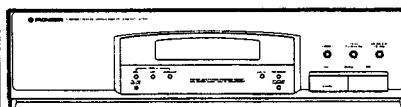
Mark	Symbol & Description	Part No.					Remarks
		F-J210 /ZEWZIX1K	F-J220 /ZEWZIX1K	F-J220 /ZEBX1K	F-J220 /ZDL	F-J220L /ZEBX1K	
NSP	TUNER assy	AWE1273	AWE1273	AWE1271	AWE1266	AWE1272	* 1
⊙	MAIN assy	AWZ4959	AWZ4959	AWZ4957	AWZ4692	AWZ4958	* 1
⊙	DISPLAY assy	AWZ4960	AWZ4960	AWZ4960	AWZ4717	AWZ4960	* 1
	Tuning button	AAD2389	AAD7051	AAD7051	AAD7051	AAD7051	
NSP	Name label	AAL2000	AAL7027	AAL7024	AAL7026	AAL7025	
NSP	T. label	AAX1690	AAX7024	.....	.....	.....	
	Antenna label	AAX1670	AAX1670	.....	.....	.....	
	Antenna label	.....	.....	AAX1671	AAX1684	AAX1671	
NSP	Label	.....	.....	AEE1012	.....	AEE1012	* 2
	Packing case	AHD2459	AHD7045 x	AHD7045	AHD7047	AHD7046	
	Front panel	AMB2100	AMB7049	AMB7049	AMB7049	AMB7050	
	Screw	ABA1047	ABA1047	.....	ABA1047	.....	
	FM antenna assy	ADH1002	ADH1002	.....	.....	.....	
	FM antenna	.....	.....	ADH1008	ADH1008	ADH1008	* 2
	Bonnet	ANE1424	ANE1424	ANE1402	ANE1400	ANE1402	
NSP	Earth plate	ANK1247	ANK1247	.....	.....	.....	
NSP	Spacer	.....	.....	AEC1236	.....	AEC1236	* 2
	Side pad(L)	AHA1573	AHA1573	AHA1573	AHA1571	AHA1573	
	Side pad(R)	AHA1574	AHA1574	AHA1574	AHA1572	AHA1574	
	Sheet	AHG1153	AHG1153	AHG1153	AHG1136	AHG1153	
NSP	Chassis	ANA1176	ANA1176	ANA1176	ANA1107	ANA1176	

Note

- * 1 : TUNER assy (AWE1271, AWE1266 and AWE1272), MAIN assy (AWZ4957, AWZ4692 and AWZ4958) and DISPLAY assy (AWZ4717) are the same as those of F-J210/ZEBX1K, ZDL and F-J210L/ZEBX1K. Refer to the service manual ARP2690 for F-J210 and F-J210L.
- * 2 : Refer to the "1. EXPLODED VIEWS, PACKING AND PARTS LIST" in the service manual ARP2690 for F-J210 and F-J210L.

Service Manual

PIONEER
The Art of Entertainment



ORDER NO.
ARP2690

FM/AM STEREO SYNTHESIZER TUNER **F-J210** **F-J210L**

F-J210 AND F-J210L HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	F-J210	F-J210L		
ZEWZIX1K	○	—	DC power supplied from other system component.	
ZEBX1K	○	○		
ZEWZI	○	—		
ZEB	○	○		
ZDL	○	—		

- This manual is applicable to the following: F-J210/ZEWZIX1K, ZEWZI, ZEBX1K, ZEB and ZDL; F-J210L/ZEBX1K and ZEB.
- For the following: F-J210/ZEWZI, ZEBX1K, ZEB and ZDL; F-J210L/ZEBX1K and ZEB, refer to page 22.
- F-J210L covers MW/LW bands while F-J210 covers MW.
- These products are systems components.
Each of these products does not function properly when independent; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.
These products' instructions are contained within the instruction manual of the related system component(s).
The manual is packed with those component(s).

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1. EXPLODED VIEWS, PACKING AND PARTS LIST

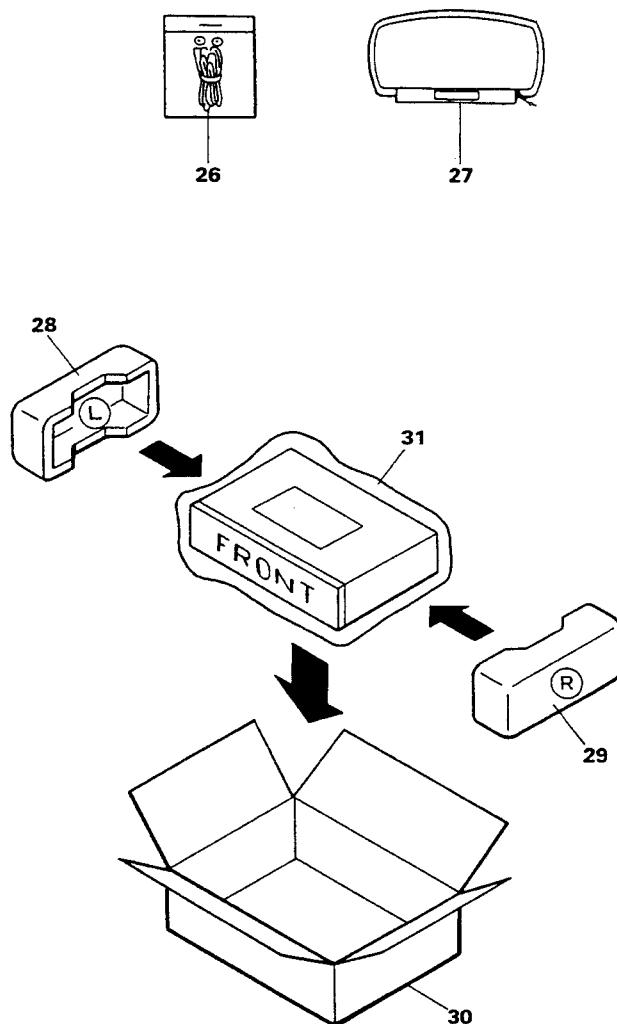
NOTES:

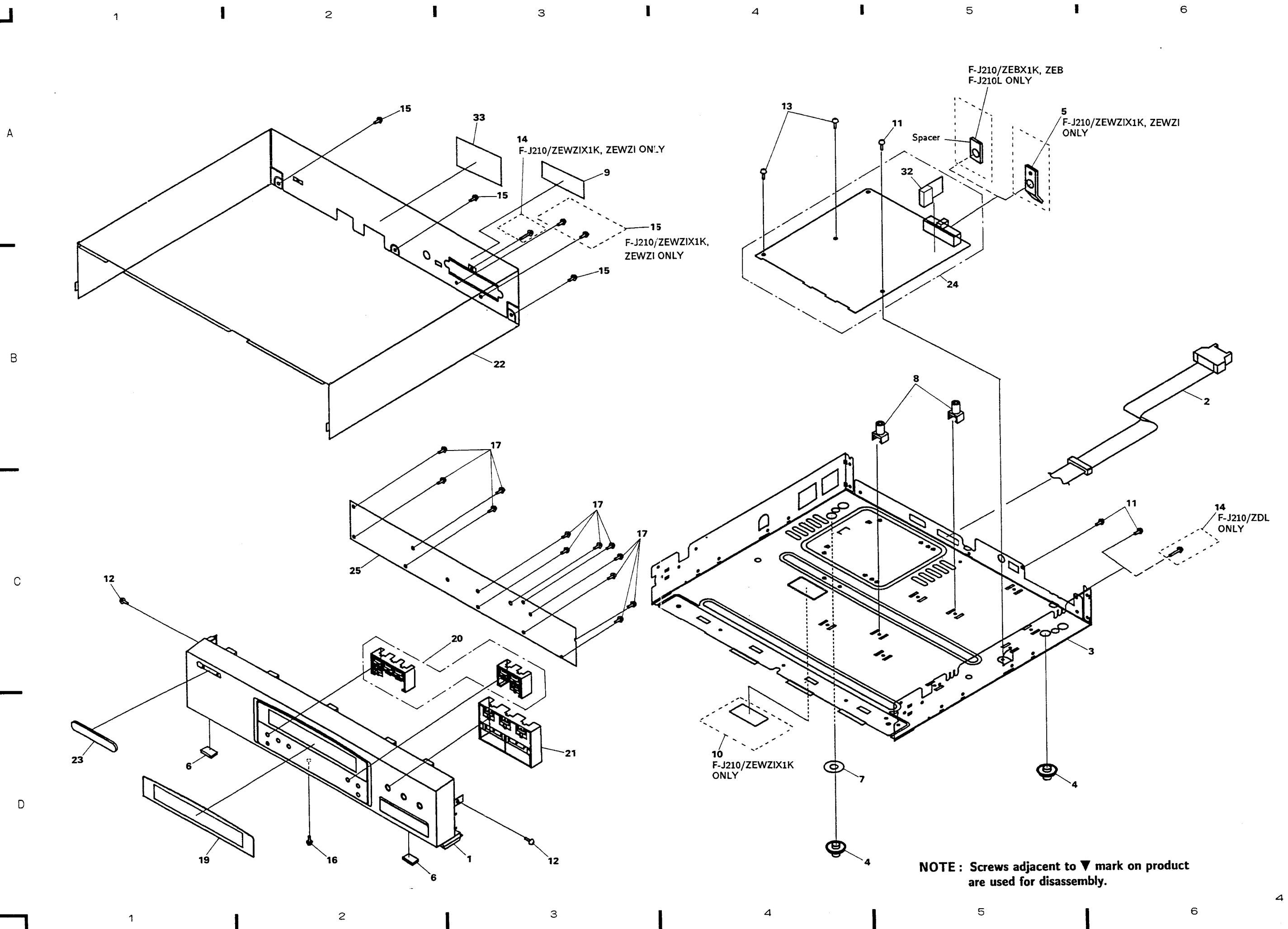
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

• Parts List

Mark	No.	Description	Parts No.
	1	FRONT PANEL	AMB2100
	2	J CORD WITH PLUG	ADE1102
NSP	3	CHASSIS	ANA1176
	4	CABINET BUMPER	AEC-784
NSP	5	EARTH PLATE	ANK1247
	6	RUBBER SHEET	AEB1111
	7	WASHER	AED1112
NSP	8	PCB MOULD	AMR1525
NSP	9	ANTENNA LABEL	AAX1670
NSP	10	T.LABEL	AAX1690
	11	SCREW	ABA-298
	12	SCREW (STEEL)	ABA1011
	13	SCREW	ABA1018
	14	SCREW (STEEL)	ABA1047
	15	SCREW	BBZ30P060FZK
	16	SCREW	BBZ30P080FZK
	17	SCREW	BPZ26P080FMC
	18	.....	
	19	DECORATION PANEL	AAK2407
	20	PROGRAM BUTTON	AAD2388
	21	TUNING BUTTON	AAD2389
	22	BONNET	ANE1424
	23	NAME PLATE(PLASTIC)	AAM1047
⊙	24	MAIN ASSEMBLY	AWZ4959
⊙	25	DISPLAY ASSEMBLY	AWZ4960
	26	FM ANTENNA	ADH1002
	27	LOOP ANTENNA	ATB1006
	28	SIDE PAD(L)	AHA1573
	29	SIDE PAD(R)	AHA1574
	30	PACKING CASE	AHD2459
	31	SHEET	AHG1153
	32	4 SERIAL F.E. MODULE ASSY	AXQ1004
NSP	33	NAME LABEL	AAL2000

• PACKING





2. SCHEMATIC AND PCB CONNECTION DIAGRAMS

Note:

(Type 3)

1. When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".
2. Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.
3. **RESISTORS:**
Unit: k: k Ω , M: M Ω , or Ω unless otherwise noted.
Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
Tolerance: (F): $\pm 1\%$, (G): $\pm 2\%$, (K): $\pm 10\%$, (M): $\pm 20\%$ or $\pm 5\%$ unless otherwise noted.
4. **CAPACITORS:**
Unit: p: pF or μ F unless otherwise noted.
Ratings: capacitor (μ F)/ voltage (V) unless otherwise noted.
Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
Unit: m: mH or μ H unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
 : Signal voltage at FM 1kHz, 100% MOD.
 : DC voltage (V) at no input signal unless otherwise noted.
Value in () is DC voltage at rated power.
 mA or $-$ mA : DC current at no input signal unless otherwise noted.
7. **OTHERS:**
 - $\rightarrow$: Signal route.
 - $\odot$: Adjusting point.
 - ∇ (Red) : Measurement point.
 - The Δ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):
DISPLAY ASSEMBLY
S6801 : UP (+)  TUNING
S6802 : DOWN (-)  TUNING
S6803 : FREQ./STATION
S6804 : BAND
S6805 : FM MONO
S6806 : LOCAL
S6807 : MEMORY SCAN
S6808 : STATION MEMORY
S6809 : SET
S6810 : WAKE-UP  TIMER
S6811 : REC  TIMER
S6812 : CLOCK ADJUST
9. For SCH -  on the schematic diagram
SCH -  indicates the drawing number of the schematic diagram.
(SCH stands for schematic diagram.)

A

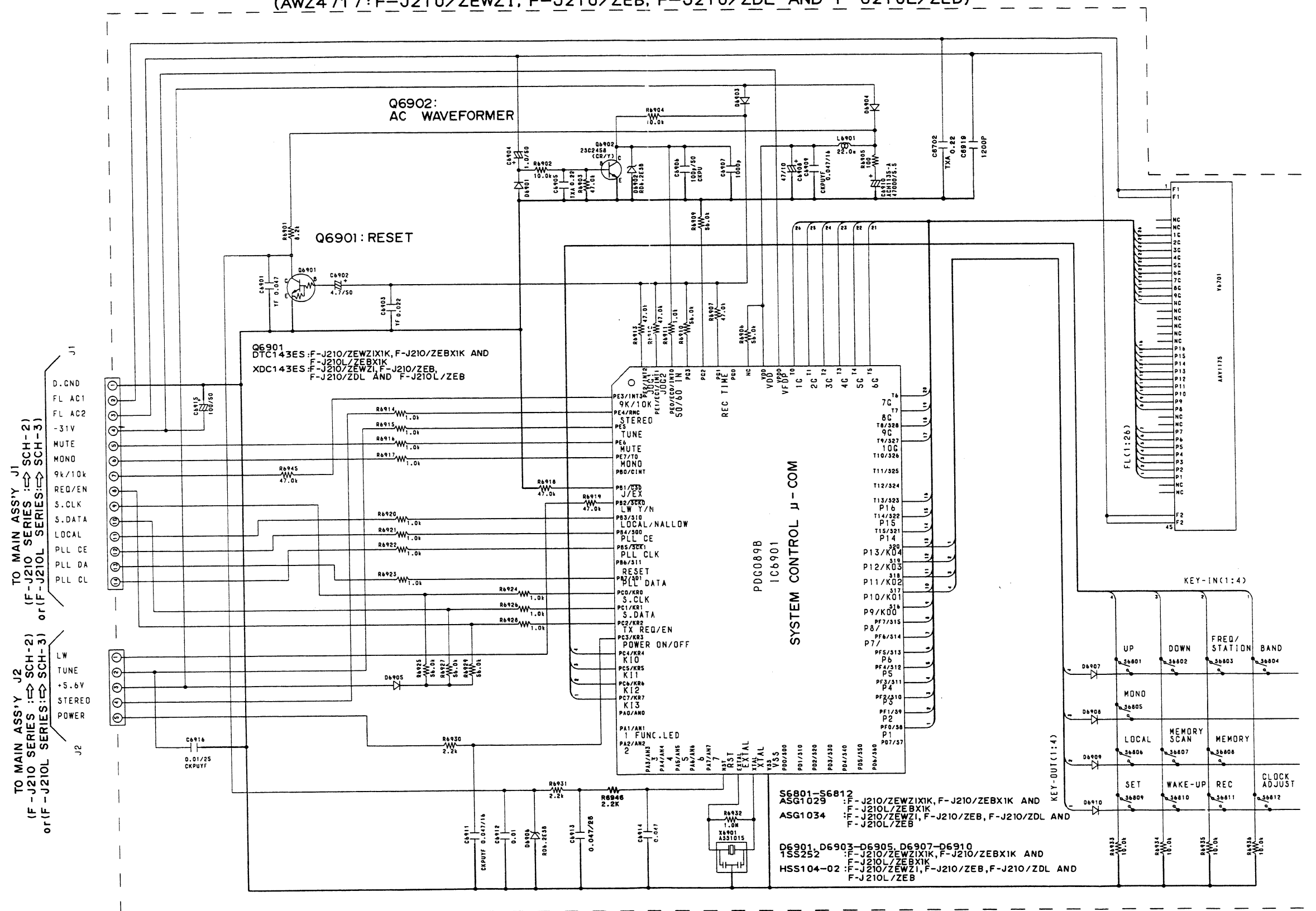
B

C

D

2.1 DISPLAY ASSEMBLY

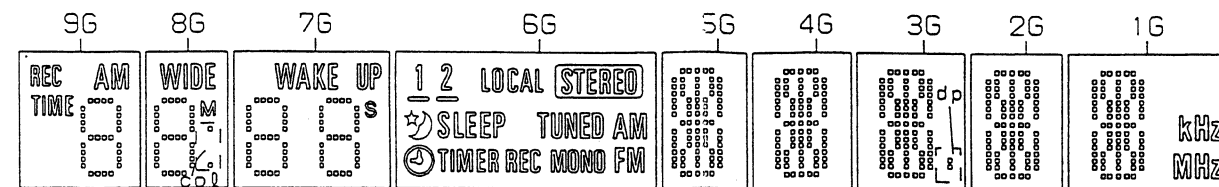
DISPLAY ASS'Y (AWZ4960: F-J210/ZEWZIX1K, F-J210/ZEBX1K AND F-J210L/ZEBX1K)
 (AWZ4717: F-J210/ZEWZ1, F-J210/ZEB, F-J210/ZDL AND F-J210L/ZEB)



SCH-1

DISPLAY
ASS'Y

●FL Tube (V 6701)



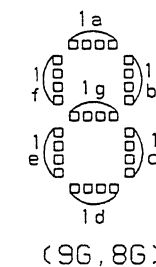
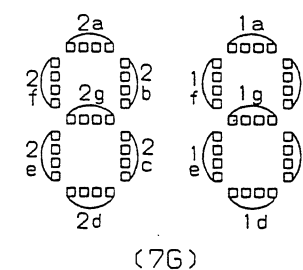
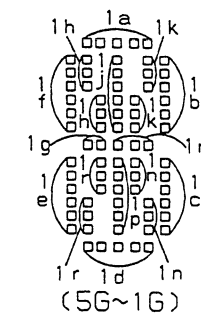
PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
CONNECTION	F	F	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	P	P
PIN NO.	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

- NOTE 1) F1, F2 --- Filament
2) NP ----- No pin
3) NC ----- No connection
4) DL ----- Datum Line
5) 1G~9G --- Grid

ANODE CONNECTION

	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	1a	1a	1a	-	1a	1a	1a	1a	1a
P2	1b	1b	1b	(1)	1b	1b	1b	1b	1b
P3	1c	1c	1c	(2)	1c	1c	1c	1c	1c
P4	1d	1d	1d	LOCAL	1d	1d	1d	1d	1d
P5	1e	1e	1e	STEREO	1e	1e	1e	1e	1e
P6	1f	1f	1f	SLEEP	1f	1f	1f	1f	1f
P7	1g	1g	1g	TIMER	1g	1g	1g	1g	1g
P8	TIME	WIDE	S	REC	1h	1h	1h	1h	1h
P9	AM	M	2a	TUNED	1j	1j	1j	1j	1j
P10	-	(col)	2b	MONO	1k	1k	1k	1k	1k
P11	REC	-	2c	AM	1m	1m	1m	1m	1m
P12	-	-	2d	FM	1n	1n	1n	1n	1n
P13	-	-	2e	-	1p	1p	1p	1p	1p
P14	-	-	2f	-	1r	1r	1r	1r	1r
P15	-	-	2g	-	-	-	s (dp)	-	kHz
P16	-	-	WAKEUP	1 2	-	-	-	-	MHz



DISPLAY ASS'Y

SCH-1



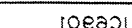
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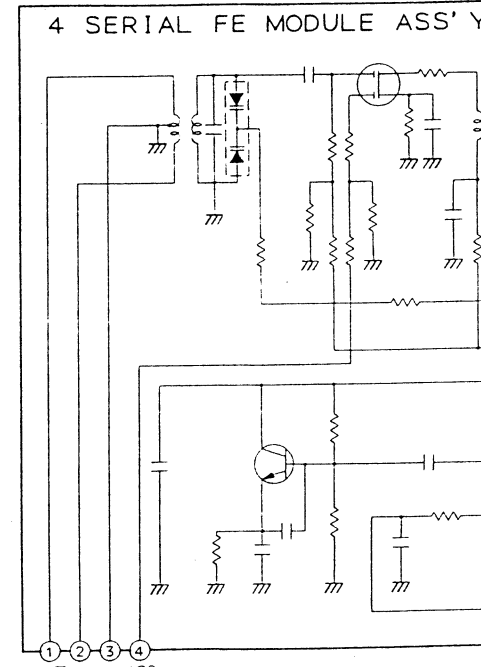
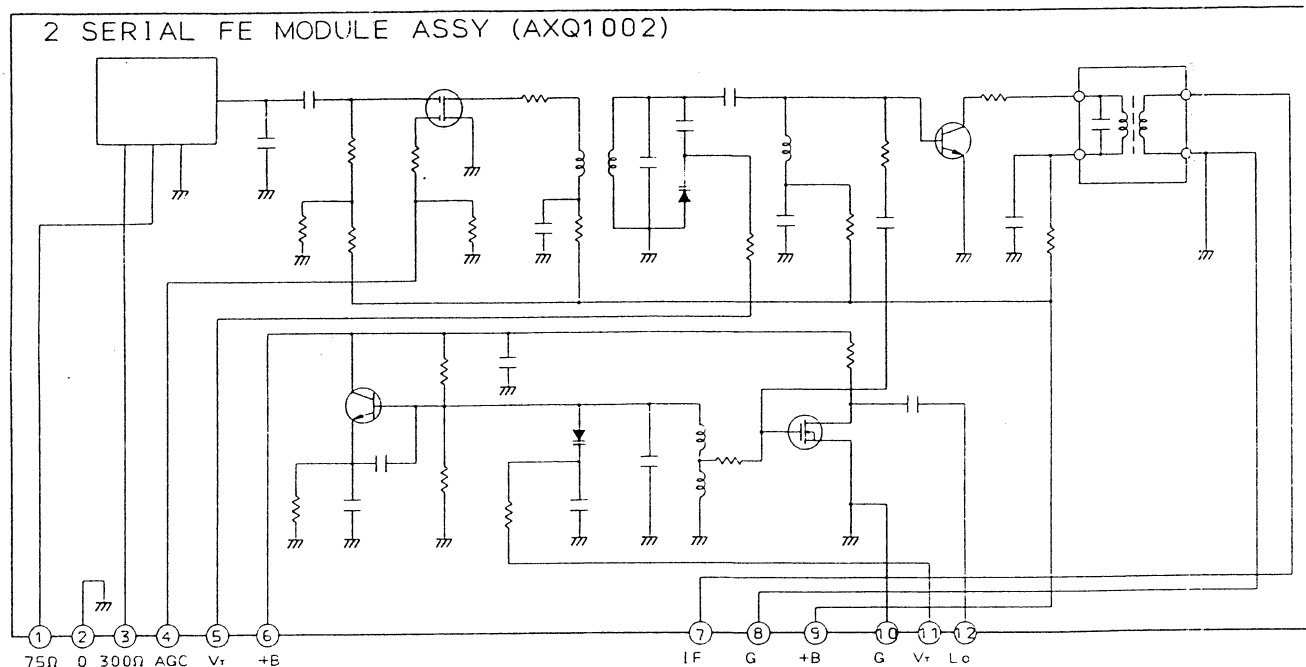
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3

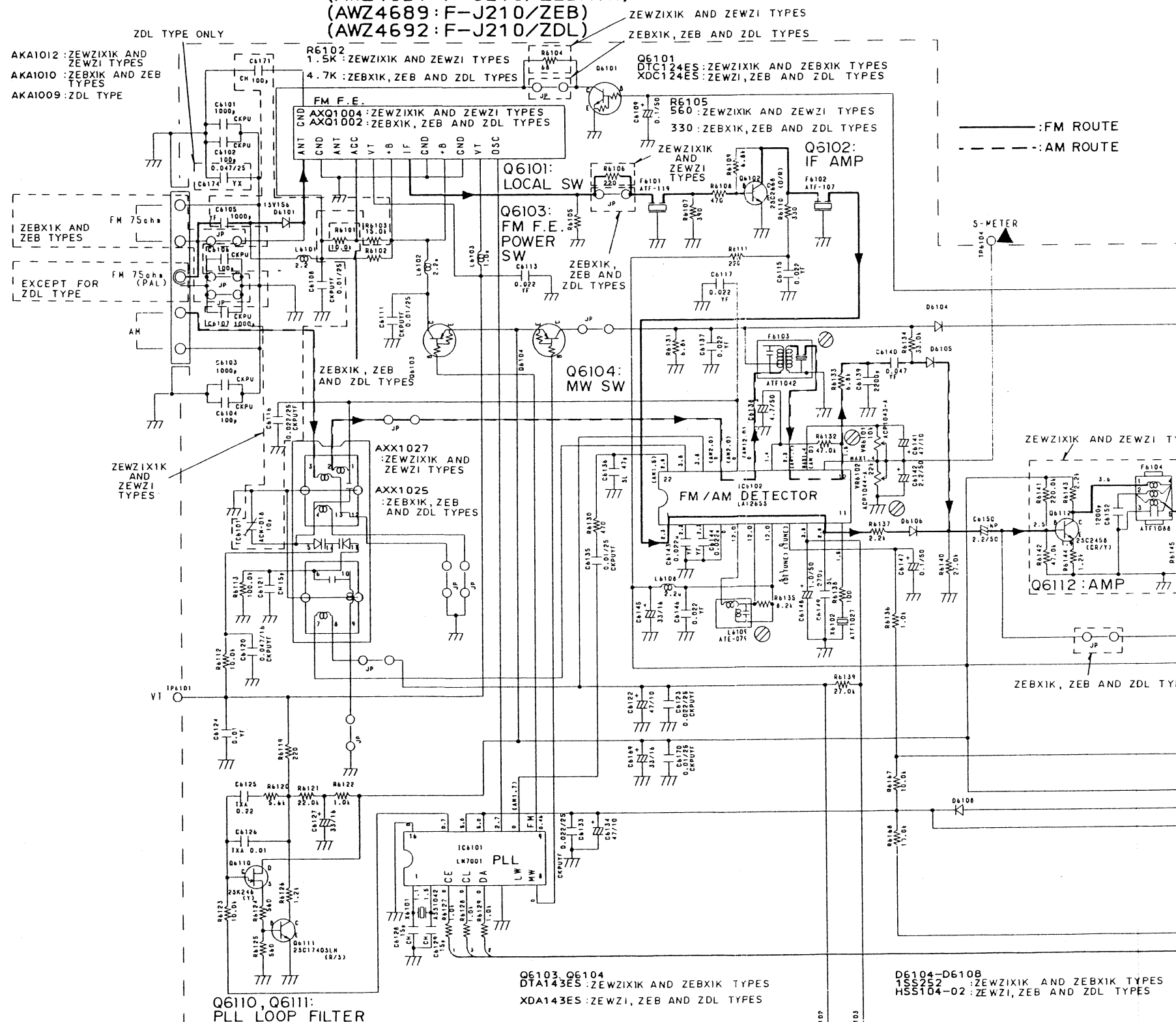


9



2.2 MAIN ASSEMBLY

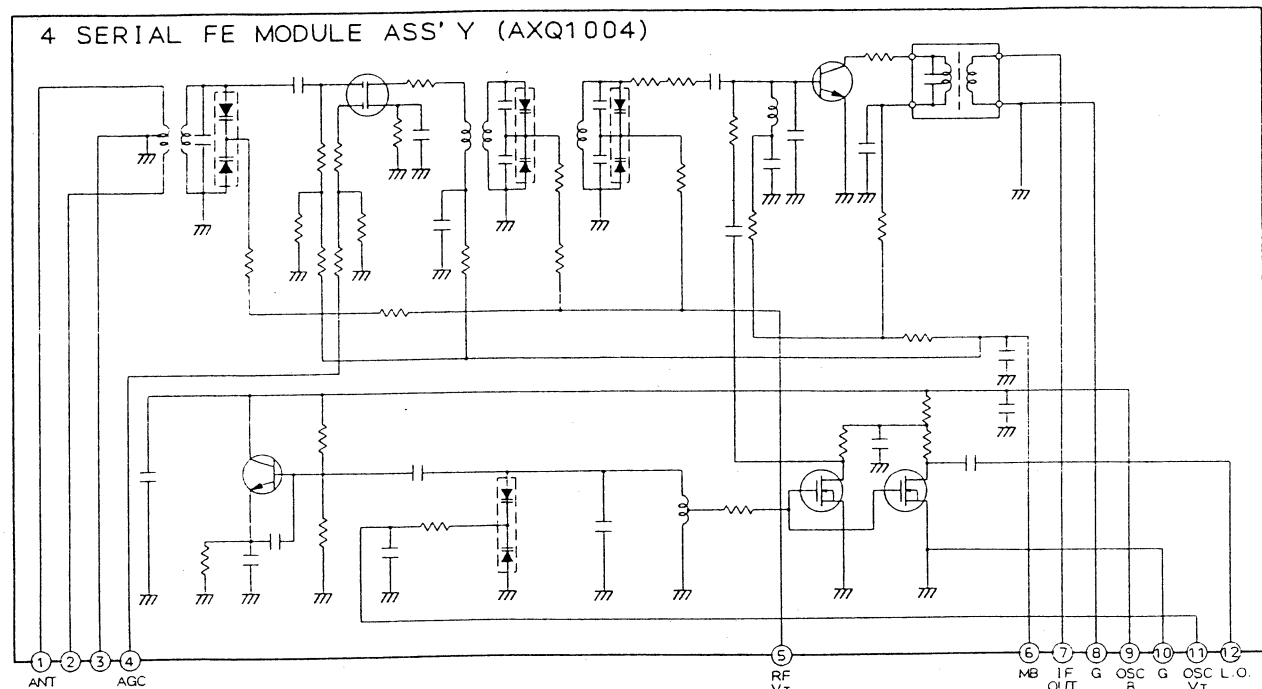
MAIN ASS'Y (AWZ4959: F-J210/ZEZXIX1K)
 (AWZ4691: F-J210/ZEZWI)
 (AWZ4957: F-J210/ZEBX1K)
 (AWZ4689: F-J210/ZEB)
 (AWZ4692: F-J210/ZDL)



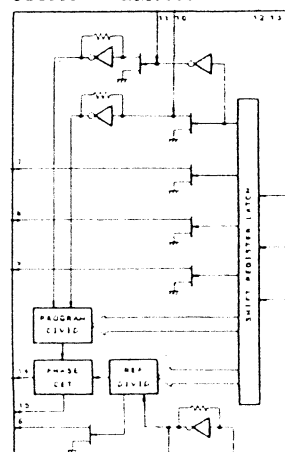
SCH-2

MAIN ASS'Y

4 SERIAL FE MODULE ASS'Y (AXQ1004)



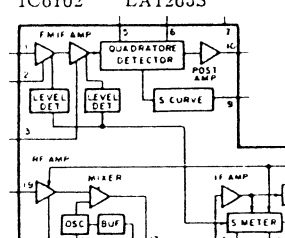
IC6101 LM7001



IC6101 LM7001

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	1.1	9	1.1
2	1.5	10	1.5
3	0	11	0
4	0	12	0
5	0	13	0
6	—	14	1.1
7	—	15	1.1
8	0	16	1.1

IC6102 LA1265S

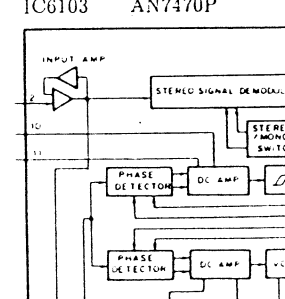


IC6102 LA1265S

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	2.3	10	2.8
2	2.3	11	1.5
3	2.3	12	1.5
4	0	13	1.4(MAX)
5	12.0	14	1.4(MAX)
6	12.0	15	0(AM)
7	12.0	16	2.3
8	0(T)		1.1(AM)
9	5.1(D)		1.4
	3.8		

Note: (T)
(D)

IC6103 AN7470P

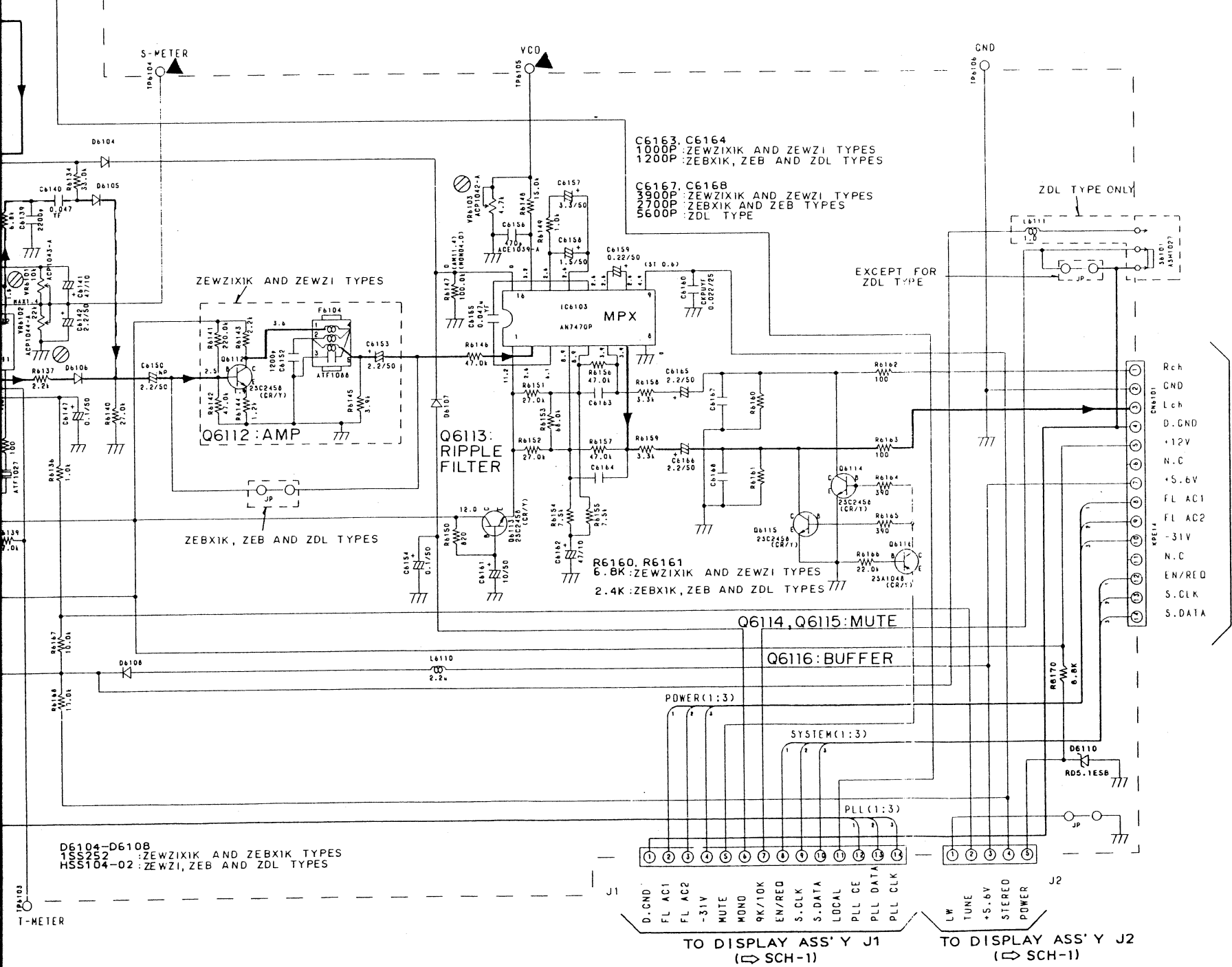


IC6103 AN7470P

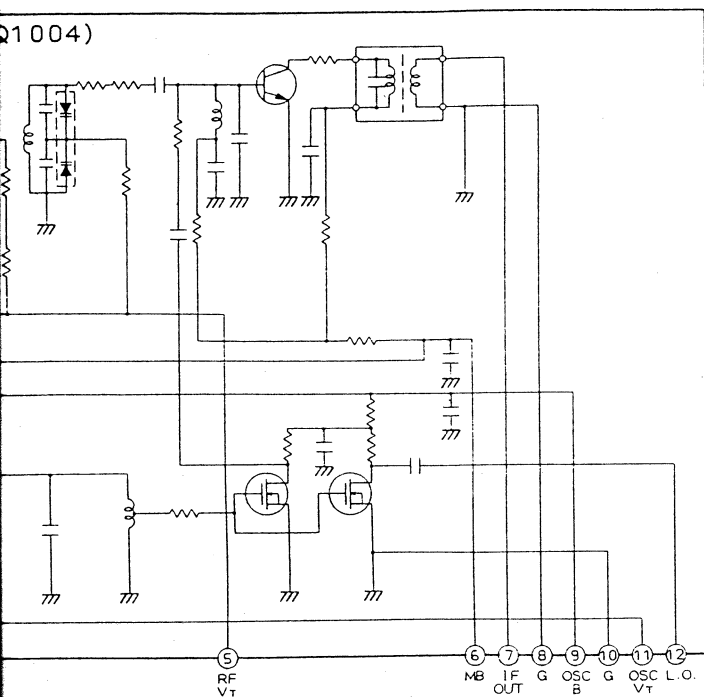
Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	11.2	9	4.9
2	2.6		0.6
3	6.1		(STEREO)
4	8.9	10	2.6
5	8.9	11	2.6
6	3.9	12	2.6
7	3.9	13	2.6
8	0	14	2.6

TYPES
TYPES
2:
MP

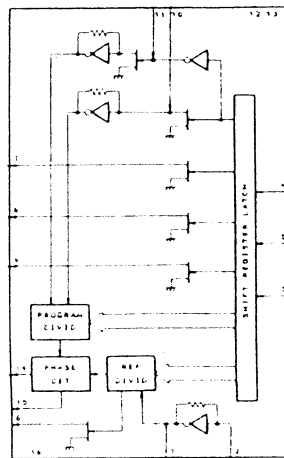
—:FM ROUTE
---:AM ROUTE



D6104-D6108
155252 : ZEWZIXIK AND ZEBXIK TYPES
H55104-02 : ZEWZI, ZEB AND ZDL TYPES



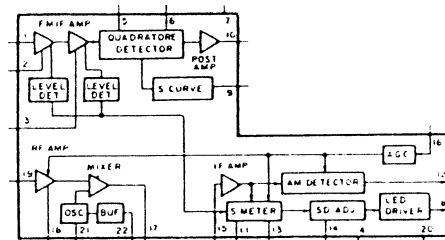
IC6101 LM7001



IC6101 LM7001

Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	1.1	9	0.46
2	1.5	10	U (AM: 1.7)
3	0	11	2.7
4	0	12	5.0
5	0	13	5.0
6	—	14	0.7
7	—	15	—
8	0	16	0

IC6102 LA1265S

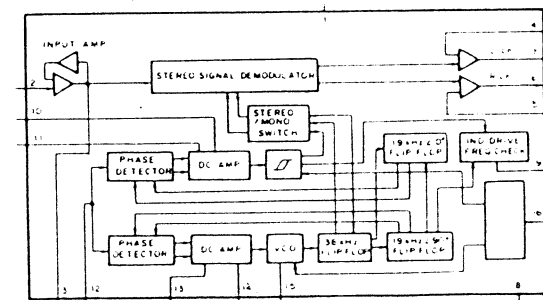


IC6102 LA1265S

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	2.3	10	2.8	17	0
2	2.3	11	1.5	18	12.0(AM)
3	2.3	12	1.5	19	0
4	0	13	1.4(MAX)	20	2.0(AM)
5	12.0	14	1.4(MAX)	21	0
6	12.0	15	0(AM)	22	2.0(AM)
7	12.0	16	2.3		
8	0(T)		1.1(AM)		
9	5.1(D)		1.4		
	3.8				

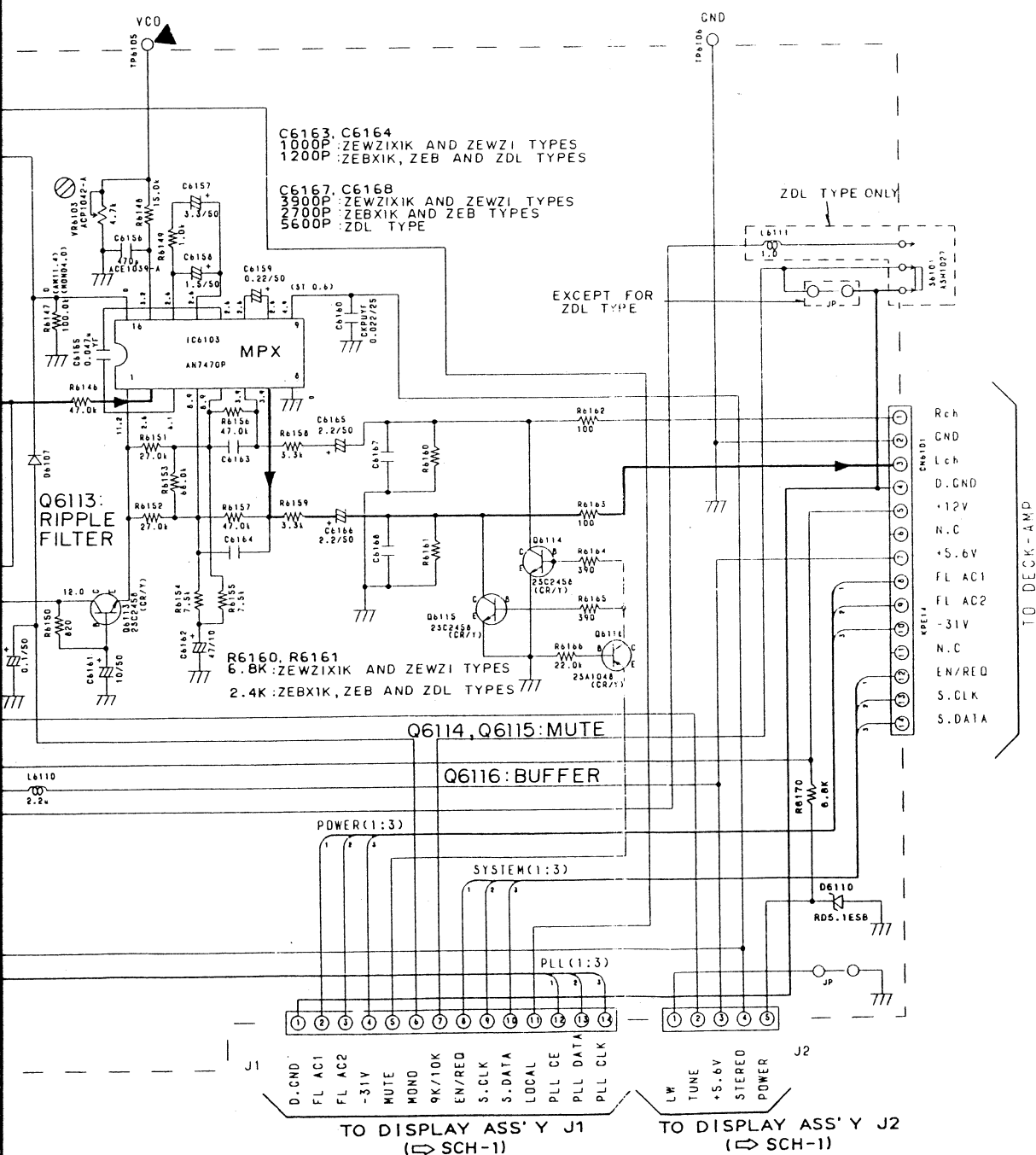
Note: (T) TUNE IND. ON
(D) TUNE IND. OFF

IC6103 AN7470P



IC6103 AN7470P

Pin No.	Voltage [V]	Pin No.	Voltage [V]	Pin No.	Voltage [V]
1	11.2	9	4.9	15	3.2
2	2.6		0.6	16	0
3	6.1		(STEREO)		11.4
4	8.9	10	2.6		(AM)
5	8.9	11	2.6		4.0
6	3.9	12	2.6		(MONO)
7	3.9	13	2.6		
8	0	14	2.6		



MAIN
ASS'Y

SCH-2

3. PCB PARTS LIST

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).
 $560\Omega \rightarrow 56 \times 10^1 \rightarrow 561$ RD1/8PM $\boxed{561}$ J
 $47k\Omega \rightarrow 47 \times 10^3 \rightarrow 473$ RD1/4PS $\boxed{473}$ J
 $0.5\Omega \rightarrow 0R5$ RN2H $\boxed{0R5}$ K
 $1\Omega \rightarrow 010$ RS1P $\boxed{010}$ K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
 $5.62k\Omega \rightarrow 562 \times 10^1 \rightarrow 5621$ RN1/4PC $\boxed{5621}$ F

Mark No.	Description	Parts No.	Mark No.	Description	Parts No.
LIST OF ASSEMBLIES					
●	MAIN ASSEMBLY	AWZ4959	C6142,C6153,C6165,C6166	CEAS2R2M50	
●	DISPLAY ASSEMBLY	AWZ4960	C6127,C6145,C6169	CEAS330M16	
MAIN ASSEMBLY			C6157	CEAS3R3M50	
SEMICONDUCTORS			C6122,C6134,C6141,C6162	CEAS470M16	
IC6103	AN7470P		C6138	CEAS4R7M50	
IC6102	LA1265S		C6159	CEASR22M50	
IC6101	LM7001		C6126	CFTXA103J50	
Q6116	2SA1048		C6125	CFTXA224J50	
Q6111	2SC1740SLN		C6163,C6164	CKDYB102K50	
Q6112-Q6115	2SC2458		C6152	CKDYB122K50	
Q6102	2SC2668		C6139	CKDYB222K50	
Q6110	2SK246		C6167,C6168	CKDYB392K50	
Q6103,Q6104	DTA143ES		C6105	CKDYF102Z50	
Q6101	DTC124ES		C6124	CKDYF103Z50	
D6104-D6108	1SS252		C6113,C6115,C6117,C6137,	CKDYF223Z50	
D6101	1SV156		C6143,C6144,C6146		
D6110	RD5.1ESB		C6140,C6155	CKDYF473Z50	
COILS, FILTERS			C6102,C6104,C6106	CKPUYB101K50	
L6109	ATE-079		C6101,C6103,C6107	CKPUYB102K50	
L6103	LAU010K		C6108,C6111,C6135,C6170	CKPUYF103Z25	
L6101,L6102,L6108,L6110	LAU2R2K		C6116,C6123,C6133,C6160	CKPUYF223Z25	
F6102	ATF-107		C6120	CKPUYF473Z16	
F6101	ATF-119		RESISTORS		
F6103	ATF1042		VR6103	(4.7K, 0.1W)	ACP1042
F6104	ATF1088		VR6101	(10K, 0.1W)	ACP1043
CAPACITORS			VR6102	(22K, 0.1W)	ACP1044
C6156 (470P, 50V(DC))	ACE1039		Other Resistors	RD1/8PM $\boxed{}$ J	
C6171	CCDCH101J50		OTHERS		
C6121,C6128,C6129	CCDCH150J50		AM RF TUNING BLOCK	AXX1027	
C6149	CCDSL271J50		TERMINAL (PAL 2P)	AKA1012	
C6136	CCDSL470J50		CONNECTOR(14P)	KPE14	
C6150	CEANP2R2M50		CERAMIC TRIMMER	ACM-018	
C6148	CEAS010M50		CRYSTAL RESONATOR	ASS1042	
C6109,C6147,C6154	CEAS0R1M50		(7.200MHz)		
C6161	CEAS100M50		X6102	CERAMIC RESONATOR	ATF1027
C6158	CEAS1R5M50				

Mark No.	Description	Parts No.
DISPLAY ASSEMBLY		
SEMICONDUCTORS		
IC6901		PDG089B
Q6902		2SC2458
Q6901		DTC143ES
D6901,D6903-D6905,D6907-D6910		1SS252
D6902,D6906		RD6.2ESB
SWITCHES		
S6801-S6812		ASG1029
COILS, FILTERS		
L6901		LAU220K
CAPACITORS		
C6910		ACH1135
C6904		CEAS010M50
C6915		CEAS101M50
C6908		CEAS470M10
C6902		CEAS4R7M50
C6702,C6905		CFTXA224J50
C6907		CKDYB102K50
C6912		CKDYB103K50
C6919		CKDYB122K50
C6903		CKDYF223Z50
C6901,C6914		CKDYF473Z50
C6913		CKDYX473M25
C6906		CKPUYB101K50
C6916		CKPUYF103Z25
C6909,C6911		CKPUYF473Z16
RESISTORS		
All Resistors		RD1/8PM $\boxed{}$ J
OTHERS		
V6701	4 SERIAL F.E. MODULE ASSY	AXQ1004
X6901	FL TUBE	AAV1175
	CRYSTAL RESONATOR	ASS1015
	(8.00MHz)	

Note : 4 serial F.E. module assy has no service part.

4. ADJUSTMENTS

4.1 ADJUSTMENT OF THE FM TUNER SECTION

- ✦ Set the mode selector to FM BAND.
- ✦ Connect the wiring as shown in Fig. 4-1.

Step No.	Adjustment Title	FM SG(1kHz, ± 75 kHz dev.)		Reception Frequency Display	Adjustment	
		Frequency(MHz)	Level(dB μ V)		Adjustment Location	Specifications
1	Center adjustment	98	80	98.0MHz	L6109	Adjust so that the DC voltage between the TP6102(Vref) and TP6103(T-meter) becomes 0V $\pm$ 50mV.
2	VCO adjustment	Non modulation	80	98.0MHz	VR6103	Adjust so that the output of the TP6105 (VCO) becomes 76kHz $\pm$ 0.5kHz
3	TUNED IND. Lighting level	98	18 ($\pm$ 3dB)	98.0MHz	VR6102	Adjust so that the indicators of TUNED IND. start to light up.

4.2 ADJUSTMENT OF MW TUNER SECTION

- ✦ Set the mode selector to AM(MW) BAND.
- ✦ Connect the wiring as shown in Fig. 4-1.
- ✦ ZDL type only : Position the channel step switch on the rear panel to the 9kHz position.

Step No.	Adjustment Title	AM SG(400Hz, 30% Mod.)		Reception Frequency Display	Adjustment	
		Frequency(kHz)	Level(dB μ V/m)		Adjustment Location	Specifications
1	Tracking adjustment* ²	603	Low input	603kHz	AM RF Tuning block antenna coil	Adjust so that the DC voltage between the TP6104 (S-meter) and GND becomes at maximum level.
		1395		1395kHz	TC6101	
2	IFT adjustment* ²	603		603kHz	F6103	
3	TUNED IND. Lighting level	999* ¹	55 ($\pm$ 5 dB)	999kHz* ¹	VR6101	Adjust so that the indicators of TUNED IND. start to light up.

Note 1 :

For the area using 10kHz step (ZDL type : 10kHz), frequencies should be as follows :

*1 : 1000 kHz

Note 2 :

Adjustment marked with " *2 " is only for F-J210/ZEWZIX1K and ZEWZI.

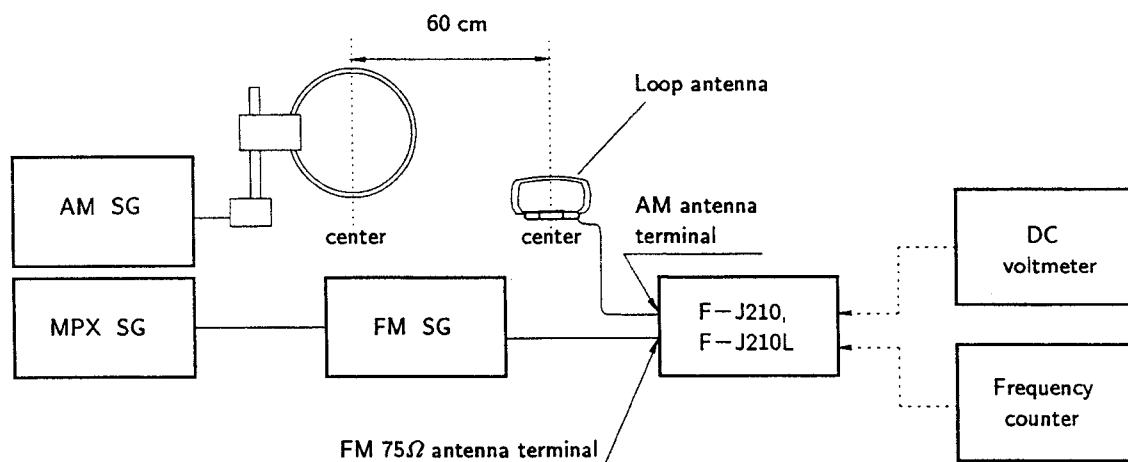


Fig. 4-1 AM and FM adjustment wiring diagram

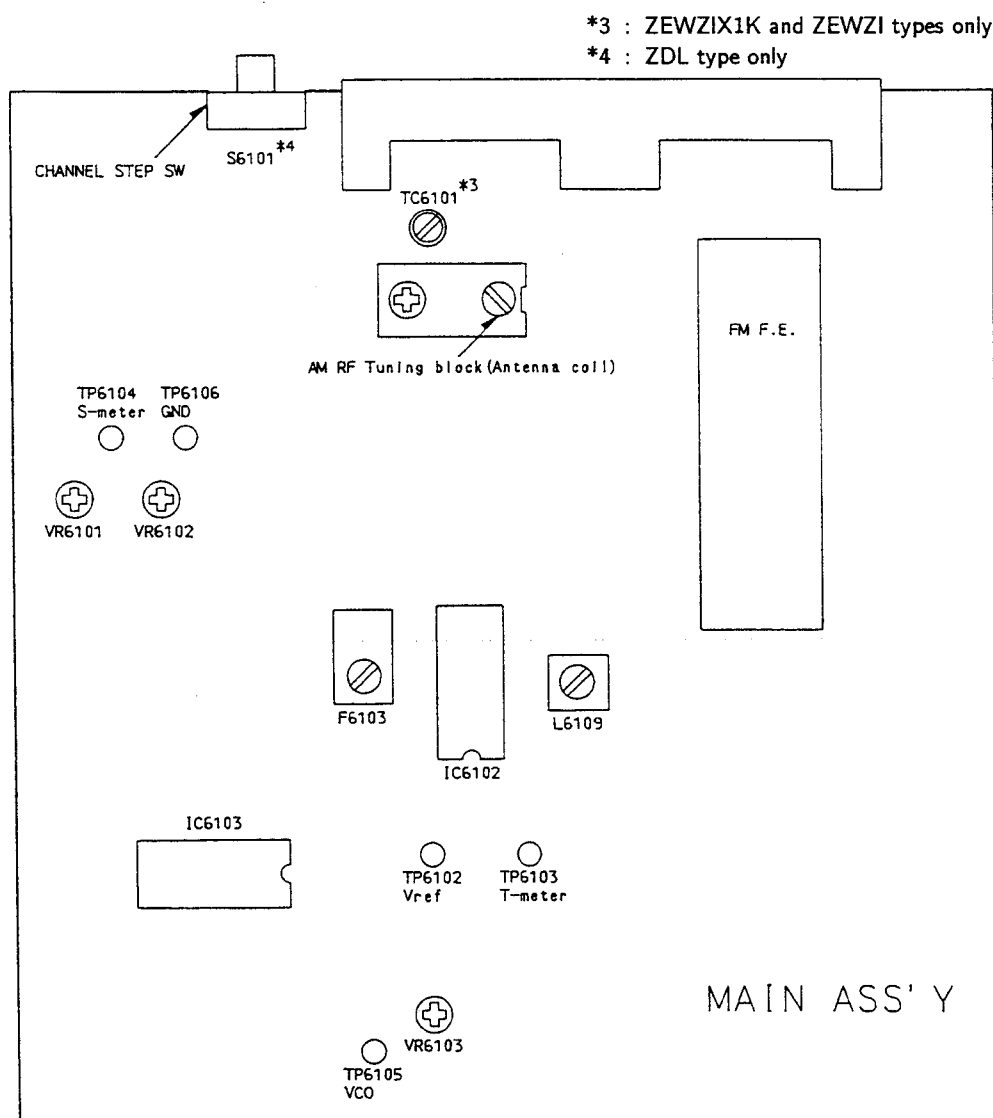


Fig. 4-2 Adjustment points

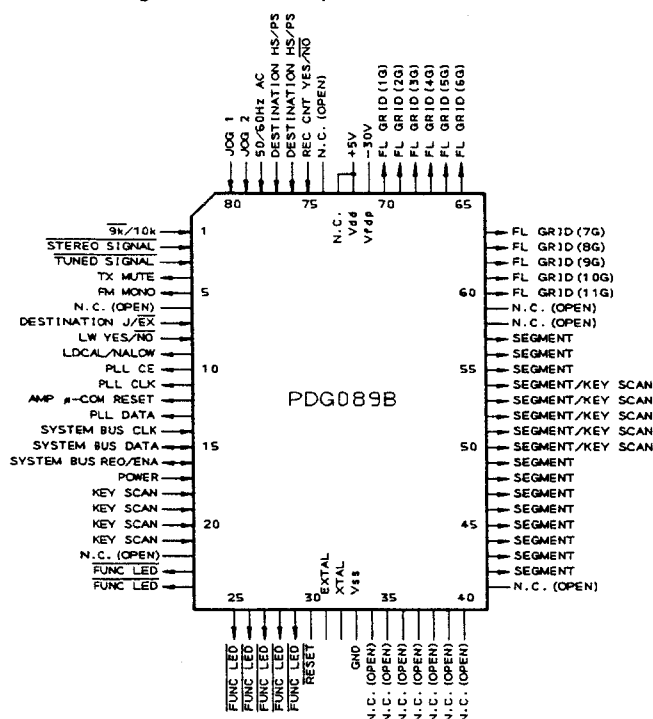
5. IC INFORMATION

- The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

■ PDG089B (IC6901)

Tuner System Control Micro-computer

- Pin Assignment (Top View)



- Pin Function

No.	Name	I/O	Description	ACT
1	PE3	I	Switching Channel Step Frequency 9k / 10k Input	
2	PE4	I	STEREO Signal Input	L
3	PE5	I	TUNED Signal Input	L
4	PE6	O	TUNER MUTE Output	H
5	PE7	O	FM MONO Output	H
6	PB0	O	Not Used (OPEN)	
7	PB1	I	J / EX Input	
8	PB2	I	LW / No LW Input	H
9	PB3	O	LOCAL & NALOW Output	H
10	PB4	O	PLL CE Output (LM7001)	
11	PB5	O	PLL CLK Output (LM7001)	

No.	Name	I/O	Description	ACT
12	PB6	O	AMP Micro-computer Reset Output	H
13	PB7	O	PLL DATA Output (LM7001)	
14	PC0	I	System bus CLK Input	
15	PC1	I/O	System bus DATA Input / Output	
16	PC2	O	System bus REQ Output	
		I	System bus ENABLE Input	
17	PC3	I	POWER IN ON / OFF	H
18	PC4	I	Key Scan Input	
19	PC5	I		
20	PC6	I		
21	PC7	I		
22	PA0	O	Not Used (OPEN)	
23	PA1	O	Function LED ON / OFF	L
24	PA2	O		
25	PA3	O		
26	PA4	O		
27	PA5	O		
28	PA6	O		
29	PA7	O		
30	RST	I/O	RESET Input	L
31	EXTAL	I	Connected to ceramic resonator (8MHz).	
32	XTAL	O		
33	Vss	-	Connected to GND	
34	PD0	DP	Not Used (OPEN)	
35	PD1	DP		
36	PD2	DP		
37	PD3	DP		

No.	Name	I/O	Description	ACT
38	PD4	DP	Not Used	
39	PD5	DP		
40	PD6	DP		
41	PD7	DP		
42	S8	DP	Segment Output	
43	S9	DP		
44	S10	DP		
45	S11	DP		
46	S12	DP		
47	S13	DP		
48	S14	DP		
49	S15	DP		
50	S16	DP	Segment Output / Key Scan Output	
51	S17	DP		
52	S18	DP		
53	S19	DP		
54	S20	DP	Segment Output	
55	S21	DP		
56	S22	DP		
57	S23	DP	Not Used (OPEN)	
58	T12	DP		
59	T11	DP	FL Grid Output (3G)	
60	T10	DP		
61	T9	DP		
62	T8	DP		
63	T7	DP		
64	T6	DP		
65	T5	DP		
66	T4	DP		
67	T3	DP		
68	T2	DP		

No.	Name	I/O	Description	ACT
69	T1	DP	FL Grid Output (2G)	
70	T0	DP	FL Grid Output (1G)	
71	Vfdp	—	— 30V FDP load power Input	
72	Vdd	—	+5V Power Suply Input	
73	NC	—	Connected to Vdd.	
74	PG0	O	Not Used (OPEN)	
75	PG1	I	REC TIME COUNTER Yes / No	H
76	PG2	I	Switching Model and Destination	
77	PG3	I		
78	PE0	I	AC Input	
79	PE1	I	JOG 2 Input	
80	PE2	I	JOG 1 Input	

NOTE :
I : CMOS Input
O : CMOS Output
N : Nch Open Drain Output
P : Pch Open Drain Output
UN : Nch Open Drain Output with Pull-up Resistor
DP : Pch Open Drain Output with Pull-down Resistor
UI : CMOS Input with Pull-up Resistor
DI : CMOS Input with Pull-down Resistor

6. FOR F – J210/ZEWZI, ZEBX1K, ZEB, ZDL, F – J210L/ZEBX1K AND ZEB

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

6.1 CONTRAST OF MISCELLANEOUS PARTS

F – J210/ZEWZI, ZEBX1K, ZEB, ZDL, F – J210L/ZEBX1K, ZEB and F – J210/ZEWZIX1K have the same construction except for the following :

Mark	Symbol & Description	Part No.							Remarks
		F – J210 /ZEWZIX1K	F – J210 /ZEWZI	F – J210 /ZEBX1K	F – J210 /ZEB	F – J210 /ZDL	F – J210L /ZEBX1K	F – J210L /ZEB	
●	MAIN assembly	AWZ4959	AWZ4691	AWZ4957	AWZ4689	AWZ4692	AWZ4958	AWZ4690	
●	DISPLAY assembly	AWZ4960	AWZ4717	AWZ4960	AWZ4717	AWZ4717	AWZ4960	AWZ4717	
NSP	Name label	AAL2000	AAL1999	AAL2001	AAL1998	AAL1997	AAL2003	AAL2002	
NSP	Antenna label	AAX1670	AAX1686	AAX1671	AAX1685	AAX1684	AAX1671	AAX1685	
NSP	T.label	AAX1690	.....	.....	.....	.....	.....	.....	
	Screw(STEEL)	ABA1047	ABA1047	.....	.....	ABA1047	.....	.....	
	FM antenna	ADH1002	ADH1002	ADH1008	ADH1008	ADH1008	ADH1008	ADH1008	
NSP	Spacer	.....	.....	AEC1236	AEC1236	.....	AEC1236	AEC1236	
	Side pad(L)	AHA1573	AHA1571	AHA1573	AHA1571	AHA1571	AHA1573	AHA1571	
	Side pad(R)	AHA1574	AHA1572	AHA1574	AHA1572	AHA1572	AHA1574	AHA1572	
	Packing case	AHD2459	AHD2497	AHD2459	AHD2497	AHD2457	AHD2460	AHD2458	
	Sheet	AHG1153	AHG1136	AHG1153	AHG1136	AHG1136	AHG1153	AHG1136	
	Front panel	AMB2100	AMB2100	AMB2100	AMB2100	AMB2100	AMB2099	AMB2099	
NSP	Chassis	ANA1176	ANA1107	ANA1176	ANA1107	ANA1107	ANA1176	ANA1107	
	Bonnet	ANE1424	ANE1423	ANE1401	ANE1401	ANE1400	ANE1402	ANE1401	
NSP	Earth plate	ANK1247	ANK1247	.....	.....	.....	.....	.....	

DISPLAY ASSEMBLY

AWZ4717 and AWZ4960 have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		AWZ4960	AWZ4717	
	Q6901	DTC143ES	XDC143ES	
	D6901, D6903 – D6905, D6907 – D6910	1SS252	HSS104 – 02	
	S6801 – S6812	ASG1029	ASG1034	

MAIN ASSEMBLY

AWZ4691, AWZ4957, AWZ4689, AWZ4692, AWZ4958, AWZ4690 and AWZ4959 have the same construction except for the following :

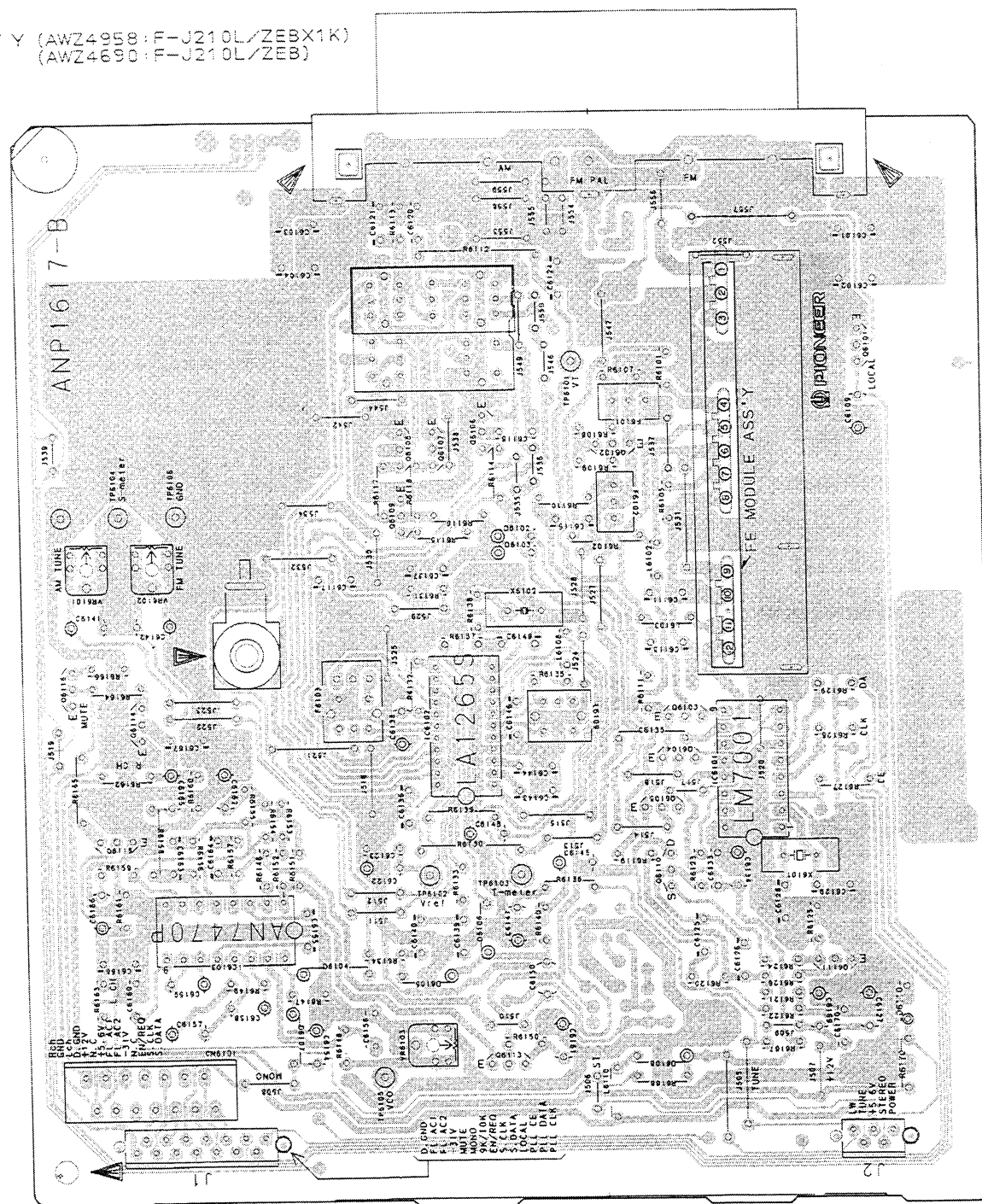
Mark	Symbol & Description	Part No.							Remarks
		AWZ4959	AWZ4691	AWZ4957	AWZ4689	AWZ4692	AWZ4958	AWZ4690	
Q6101		DTC124ES	XDC124ES	DTC124ES	XDC124ES	XDC124ES	DTC124ES	XDC124ES	
Q6103, Q6104		DTA143ES	XDA143ES	DTA143ES	XDA143ES	XDA143ES	DTA143ES	XDA143ES	
Q6105							DTA143ES	XDA143ES	
Q6106 - Q6109							DTC124ES	XDC124ES	
Q6112		2SC2458	2SC2458	.....	.....	.....	.....	.....	
D6101		1SV156	1SV156	.....	.....	.....	.....	.....	
D6102, D6103							1SS252	HSS104 - 02	
D6104 - D6108		1SS252	HSS104 - 02	1SS252	HSS104 - 02	HSS104 - 02	1SS252	HSS104 - 02	
S6101						ASH1027	.....	.....	
F6104		ATF1088	ATF1088	.....	.....	.....	.....	.....	
L6101		LAU2R2K	LAU2R2K	.....	.....	.....	.....	.....	
L6111						LAU010K	.....	.....	
C6105		CKDYF102Z50	CKDYF102Z50	.....	.....	.....	.....	.....	
C6106		CKPUYB101K50	CKPUYB101K50	.....	.....	.....	.....	.....	
C6107		CKPUYB102K50	CKPUYB102K50	.....	.....	.....	.....	.....	
C6108		CKPUYF103Z25	CKPUYF103Z25	.....	.....	.....	.....	.....	
C6116		CKPUYF223Z25	CKPUYF223Z25	.....	.....	.....	.....	.....	
C6118							CKPUYF473Z16	CKPUYF473Z16	
C6152		CKDYB122K50	CKDYB122K50	.....	.....	.....	.....	.....	
C6153		CEAS2R2M50	CEAS2R2M50	.....	.....	.....	.....	.....	
C6163, C6164		CKDYB102K50	CKDYB102K50	CKDYB122K50	CKDYB122K50	CKDYB122K50	CKDYB122K50	CKDYB122K50	
C6167, C6168		CKDYB392K50	CKDYB392K50	CKDYB272K50	CKDYB272K50	CKDYB562K50	CKDYB272K50	CKDYB272K50	
C6171		CCDCH101J50	CCDCH101J50	.....	.....	.....	.....	.....	
C6174						CKDYX473M25	.....	.....	
R6101				RD1/8PM103J	RD1/8PM103J	RD1/8PM103J	RD1/8PM103J	RD1/8PM103J	
R6102		RD1/8PM152J	RD1/8PM152J	RD1/8PM472J	RD1/8PM472J	RD1/8PM472J	RD1/8PM472J	RD1/8PM472J	
R6103		RD1/8PM153J	RD1/8PM153J	.....	.....	.....	.....	.....	
R6104		RD1/8PM680J	RD1/8PM680J	.....	.....	.....	.....	.....	
R6105		RD1/8PM561J	RD1/8PM561J	RD1/8PM331J	RD1/8PM331J	RD1/8PM331J	RD1/8PM331J	RD1/8PM331J	
R6106		RD1/8PM221J	RD1/8PM221J	.....	.....	.....	.....	.....	
R6114 - R6116							RD1/8PM103J	RD1/8PM103J	
R6117, R6118							RD1/8PM102J	RD1/8PM102J	
R6141		RD1/8PM224J	RD1/8PM224J	.....	.....	.....	.....	.....	
R6142		RD1/8PM473J	RD1/8PM473J	.....	.....	.....	.....	.....	
R6143		RD1/8PM222J	RD1/8PM222J	.....	.....	.....	.....	.....	
R6144		RD1/8PM122J	RD1/8PM122J	.....	.....	.....	.....	.....	
R6145		RD1/8PM392J	RD1/8PM392J	.....	.....	.....	.....	.....	
R6160, R6161		RD1/8PM682J	RD1/8PM682J	RD1/8PM242J	RD1/8PM242J	RD1/8PM242J	RD1/8PM242J	RD1/8PM242J	
TC6101		ACM - 018	ACM - 018	.....	.....	.....	.....	.....	
Antenna terminal(4P)						AKA1009	.....	.....	
Antenna terminal(PAL 4P)				AKA1010	AKA1010	.....	AKA1010	AKA1010	
Antenna terminal(PAL 2P)		AKA1012	AKA1012	.....	.....	.....	.....	.....	
2 serial FE module assembly		AXQ1002	AXQ1002	AXQ1002	AXQ1002	AXQ1002	AXQ1002	AXQ1002	
4 serial FE module assembly		AXQ1004	AXQ1004	.....	.....	.....	.....	.....	
AM RF tuning block		AXX1027	AXX1027	AXX1025	AXX1025	AXX1025	AXX1026	AXX1026	

Note : 2 serial F.E. module assembly has no service part.

6.2 PCB PATTERN

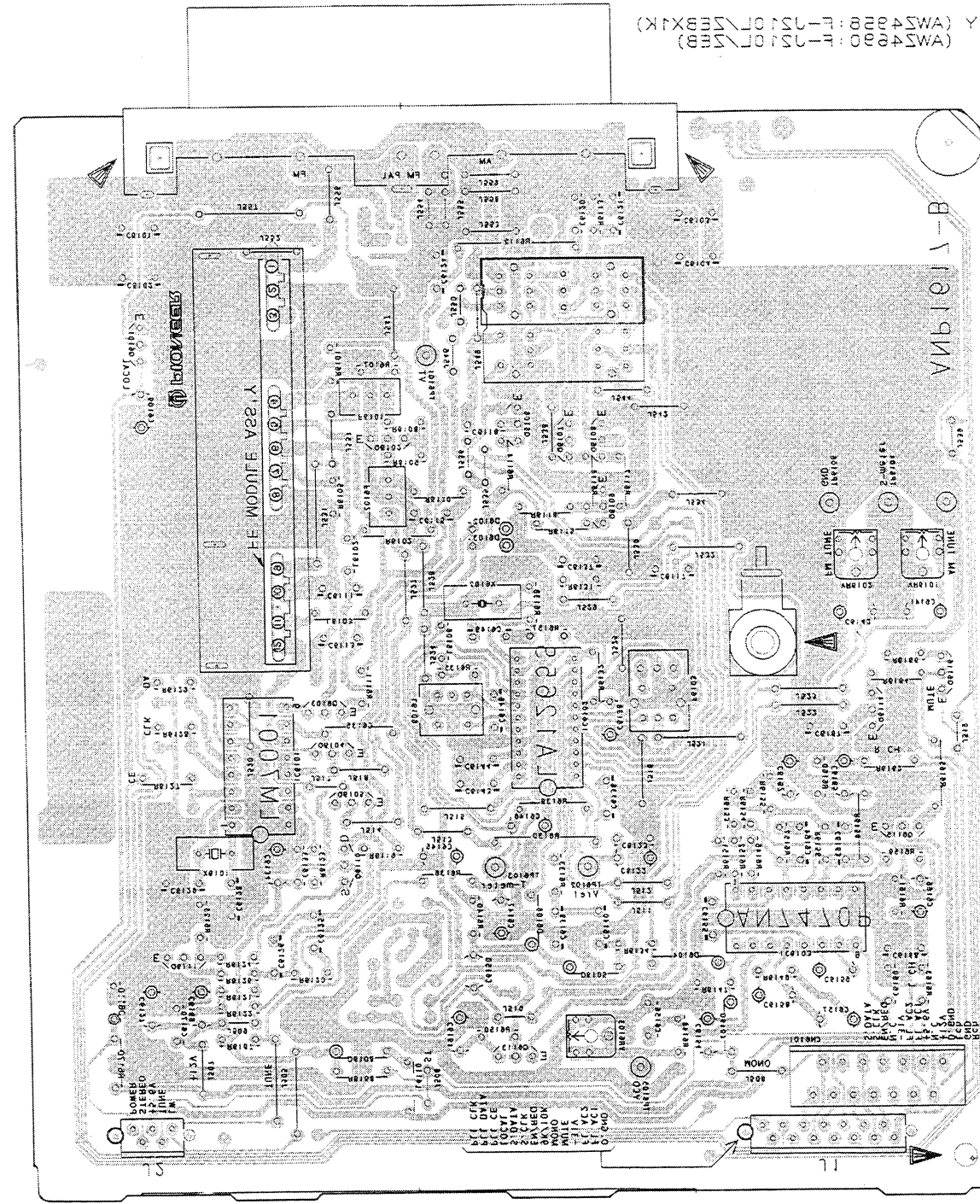
● FOR F-J210L/ZEBX1K AND ZEB

This P.C.B. connection diagram is viewed from the parts mounted side.

A MAIN ASS'Y (AWZ4958: F-J210L/ZEBX1K)
(AWZ4959: F-J210L/ZEB)

VR6101
Q6116
Q6115
Q6114
IC6103
Q6108 Q6109
Q6107
IC6102
Q6106
Q6113
Q6102
Q6105
Q6110
Q6103 Q6104
IC6101
Q6111
Q6101

This P.C.B. connection diagram is viewed from the foil side.

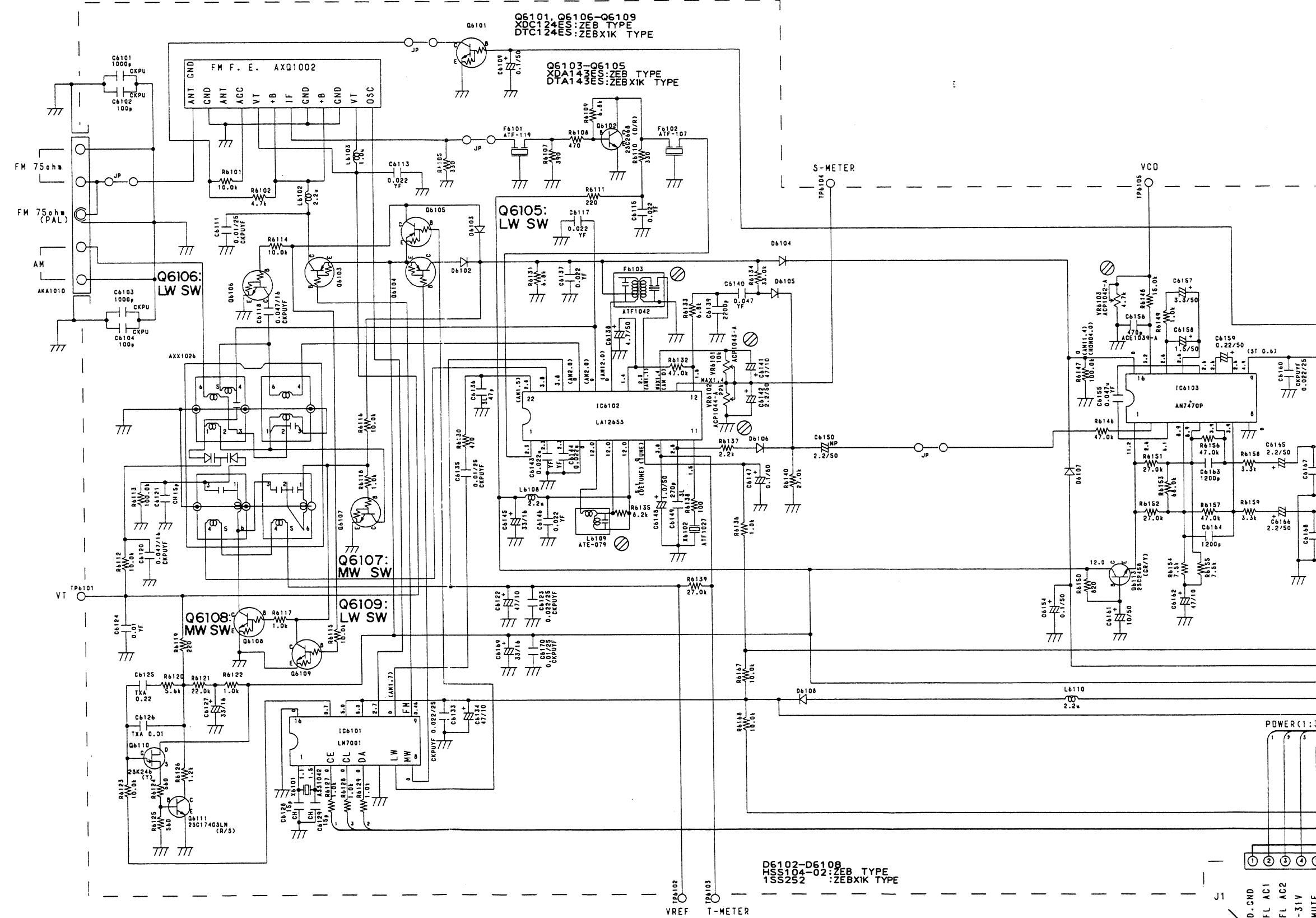
A MAIN ASS'Y (AWZ4958: F-J210L/ZEBX1K)
(AWZ4959: F-J210L/ZEB)

VR6101
Q6116
Q6115
Q6114
IC6103
Q6108 Q6109
Q6107
IC6102
Q6106
Q6113
Q6102
Q6105
Q6110
Q6103 Q6104
IC6101
Q6111
Q6101

6.3 SCHEMATIC DIAGRAM

● FOR F-J210L/ZEBX1K AND ZEB

MAIN ASS'Y (AWZ4958:F-J210L/ZEBX1K)
(AWZ4690:F-J210L/ZEB)



SCH-3

MAIN ASS'Y

TO DIS
0.5ND
FL AC1
FL AC2
-31V
MUTE

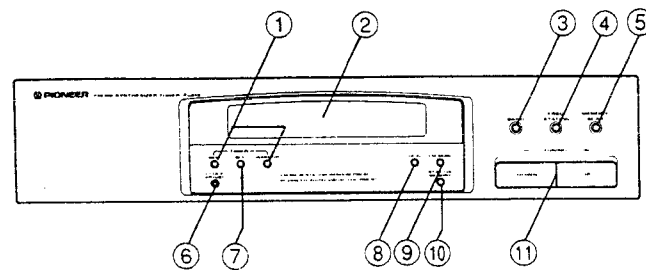
4



A

5

7. PANEL FACILITIES



① TIMER selector buttons

[REC]

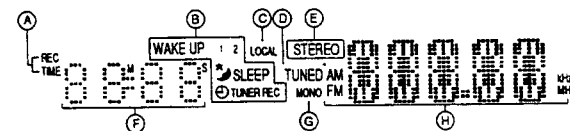
Used for setting timer recording.

[WAKE-UP]

Used for setting timer playback. Each time this button is pressed, WAKE-UP 1 or WAKE-UP 2 is selected alternately.

② Display section

Shows current time, received frequency, contents of timer settings, etc.



A Deck II REC TIME Indicator

Lights when deck II is recording.

B Timer Indicators

- SLEEP : Lights when the SLEEP timer is set.
- WAKE-UP 1, 2 : Lights when WAKE-UP 1 or 2 is set.
- REC : Lights when the timer recording is set.
- TIMER : Lights up during timer recording operation.

C LOCAL Indicator

Lights when the LOCAL button is set to ON.

D TUNED Indicator

Lights when a broadcast is received and tuned in well.

E STEREO Indicator

Lights when an FM stereo broadcast is received (FM MONO button set to OFF).

F Time display

This shows the present time and during recording, it shows the elapsed recording time. Once STATION (broadcasting station) has been called, the STATION CALL number will always be displayed regardless of the listening sources. The time will be displayed in the standby mode and when the timer has been set.

G MONO indicator

Lights when the FM MONO button is set to ON. When this indicator is lit, FM stereo broadcasts are reproduced monaurally.

H Frequency display

Shows received broadcast frequency. Also gives scrolling display of main function status.

- FM and MHz light : FM reception
- AM and kHz light : MW or LW reception

NOTE:

The elapsed recording time might not be displayed due to noise from the power supply caused by improper timing of connecting the power cord. In such a case, disconnect the power cord and connect it again.

③ BAND selector button

Each time this button is pressed, FM or AM (MW or LW) reception is selected alternately.

④ FREQ./STATION button

Use to select the display mode (frequency mode or station mode).

[Frequency mode]

Display indicates the frequency of the tuned station, and the current time.

[Station mode]

Display indicates the frequency of the tuned station together with the recorded station number assigned to that station.

⑤ MEMORY SCAN button

Used for scanning memorized stations.

⑥ CLOCK ADJUST button

Used for starting the clock adjustment.

⑦ SET button

Used for current time, timer playback, and timer recording setting.

⑧ LOCAL button

Use this if the broadcast signal is too strong, causing noise and distortion. The attenuator reduces the strength of the signal, reducing noise and distortion.

⑨ FM MONO button

Turn on when there is much noise during reception of FM stereo broadcasts. The reproduced sound will become monaural but noise will be reduced.

⑩ STATION MEMORY button

Used for memorizing stations.

⑪ TUNING - (DOWN) / + (UP) button

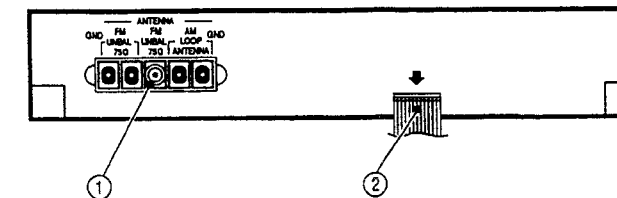
[During tuning]

Used for locating stations.

Use "-" button for lower, and "+" button for higher station number or frequencies.

[During time and timer setting]

Used for adjusting the clock, timer setting and its related adjustments.



① FM/AM ANTENNA terminals

Antennas must be connected to these terminals: otherwise you will not be able to receive stations.

② TUNER flat cable

Connect to the TUNER jack of the CD cassette deck amplifier.

8. SPECIFICATIONS

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	Mono: 12.8 dBf, IHF (1.2 μ V/75 Ω)
Sensitivity (DIN)	Mono S/N 26 dB: 1 μ V/75 Ω
	Stereo S/N 46 dB: 35 μ V/75 Ω
Signal-to-Noise Ratio (IHF, 85 dBf Input)	Mono: 77 dB
Signal-to-Noise Ratio (DIN)	Mono: 66 dB
	Stereo: 60 dB
Distortion	Stereo: 0.5% (1 kHz)
Antenna Input	75 Ω unbalanced

MW (AM) Tuner Section

Frequency Range	531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna)	350 μ V/m
Antenna	Loop Antenna

LW (AM) Tuner Section (F-J210L only)

Frequency Range	153 kHz to 281 kHz
Sensitivity (IHF, Loop antenna)	1,500 μ V/m
Antenna	Loop Antenna

Miscellaneous

Dimensions	360 (W) x 80 (H) x 324 (D) mm
Weight (without package)	2.2 kg

Furnished Parts

FM Antenna	1
AM Loop Antenna	1